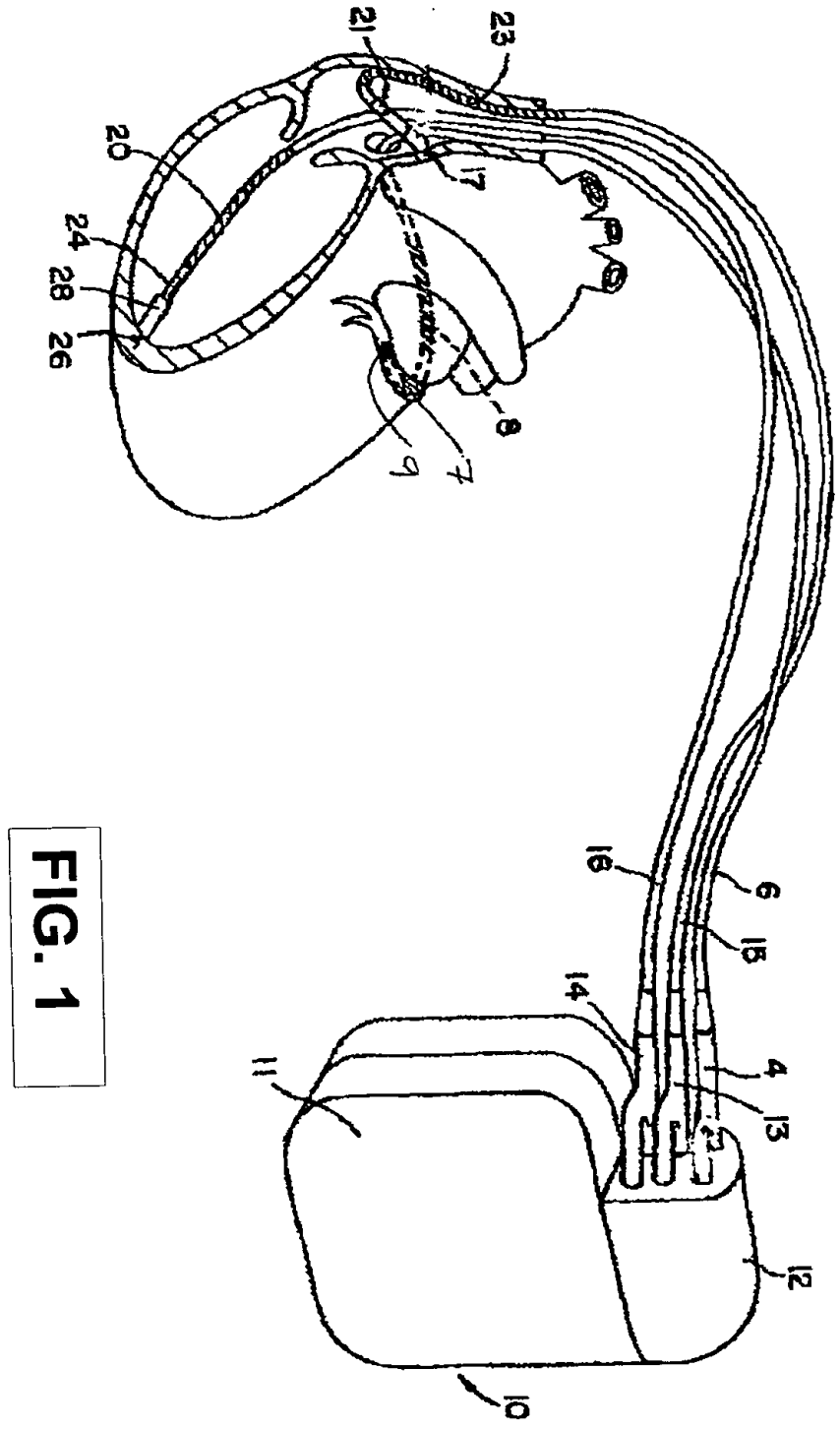

FIG. 1

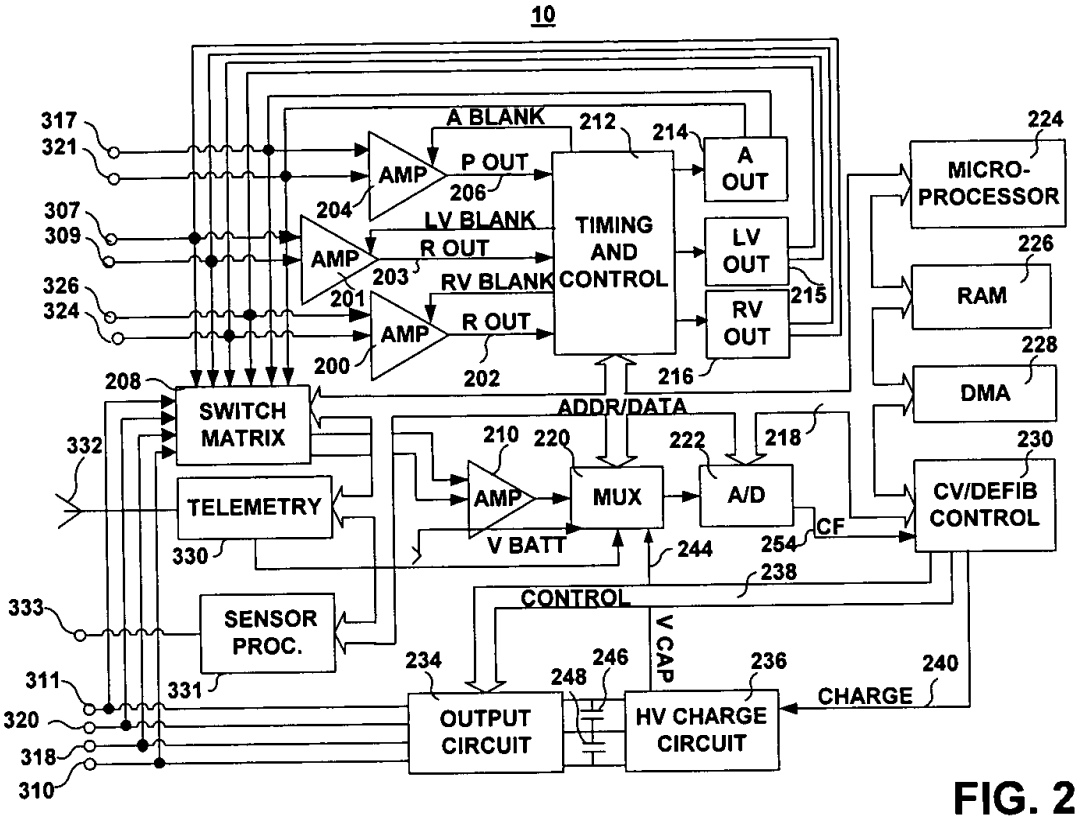
10
317
321
307
309
326
324
208
332
333
311
320
318
310
331
330
A BLANK
212
214
AMP
P OUT
206
204
LV BLANK
R OUT
203
AMP
RV BLANK
201
AMP
R OUT
200
202
TIMING AND CONTROL
A OUT
LV OUT
RV OUT
215
216
224
MICRO-PROCESSOR
226
RAM
228
DMA
230
CV/DEFIB CONTROL
SWITCH MATRIX
ADDR/DATA
210
220
222
218
AMP
MUX
A/D
CF
254
V BATT
244
238
TELEMETRY
CONTROL
SENSOR PROC.
V CAP
234
246
248
236
240
CHARGE
OUTPUT CIRCUIT
HV CHARGE CIRCUIT

FIG. 2

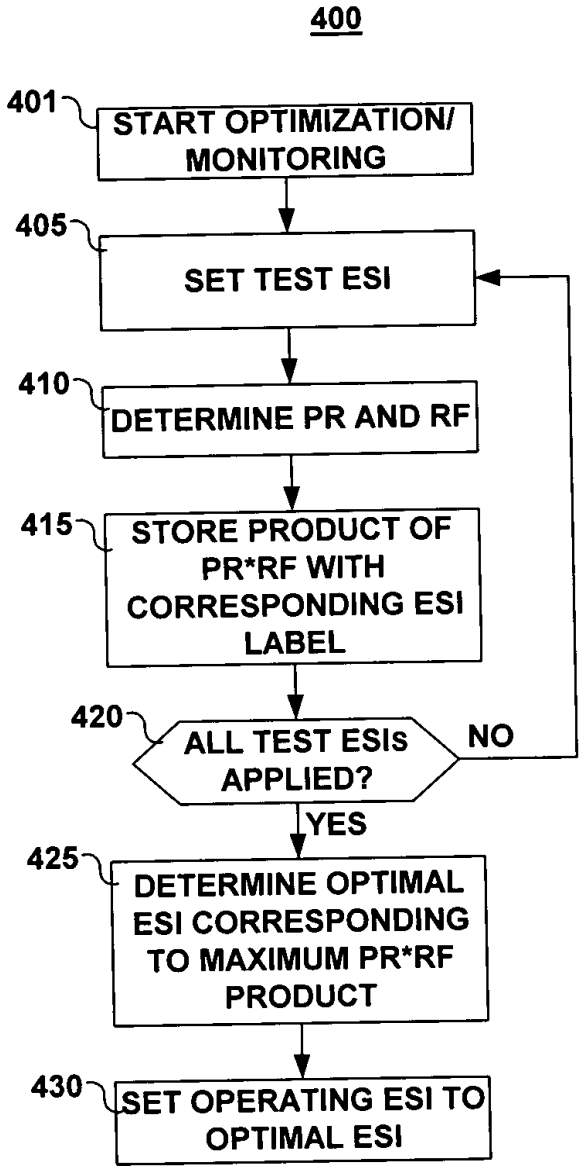
400
401
START OPTIMIZATION/ MONITORING
405
SET TEST ESI
410
DETERMINE PR AND RF
415
STORE PRODUCT OF PR*RF WITH CORRESPONDING ESI LABEL
420
ALL TEST ESIs APPLIED?
NO
YES
425
DETERMINE OPTIMAL ESI CORRESPONDING TO MAXIMUM PR*RF PRODUCT
430
SET OPERATING ESI TO OPTIMAL ESI

FIG. 3

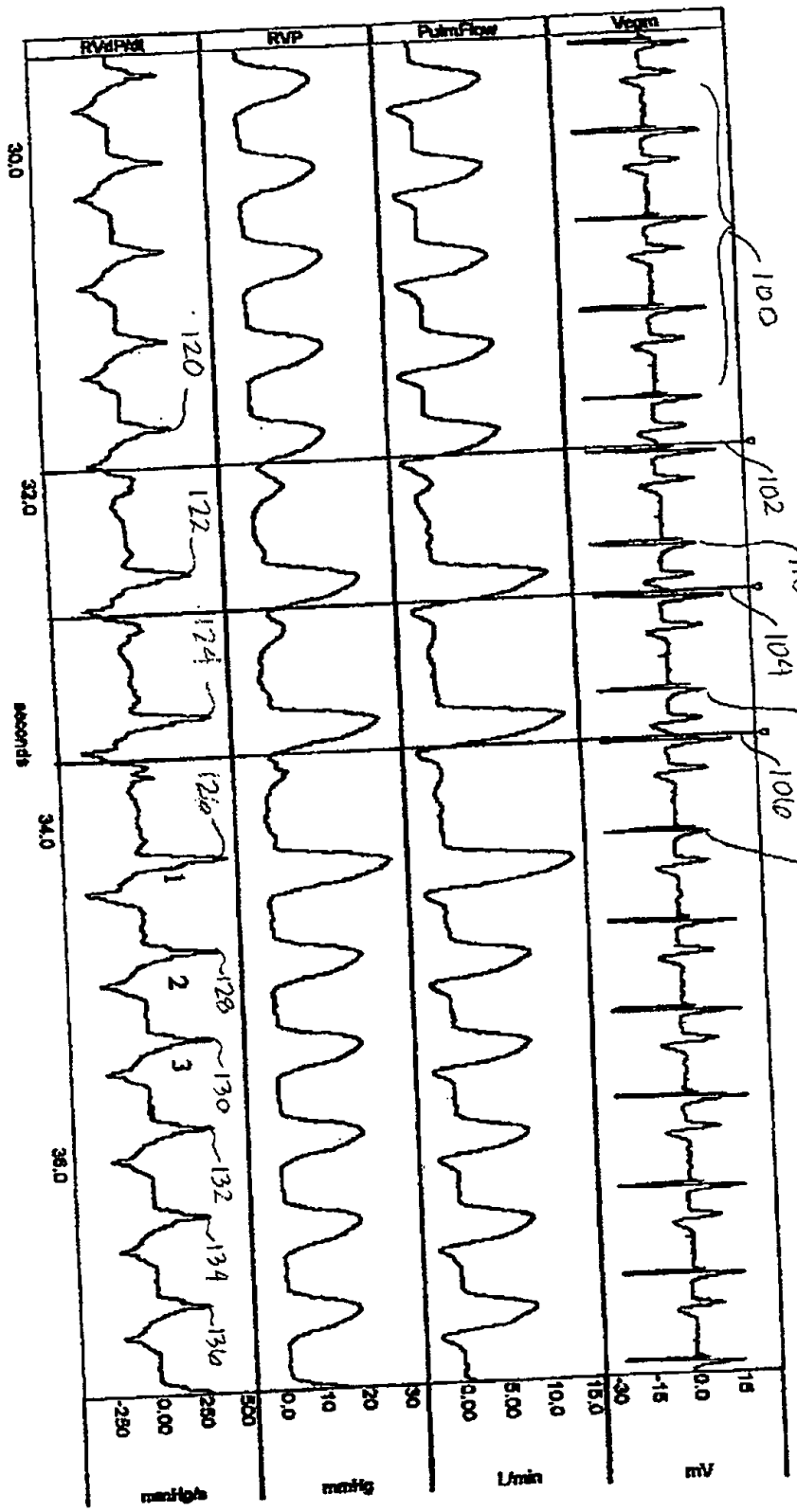
RVdPdt
RVP
PulmFlow
Vegm
100
102
110
104
112
106
114
120
122
124
126
128
130
132
134
136
30.0
32.0
34.0
36.0
seconds
mmHg/s
mmHg
L/min
mV
-250
0.00
250
500
0.0
10
20
30
0.00
5.00
10.0
15.0
-30
-15
0.0
15

FIG. 4

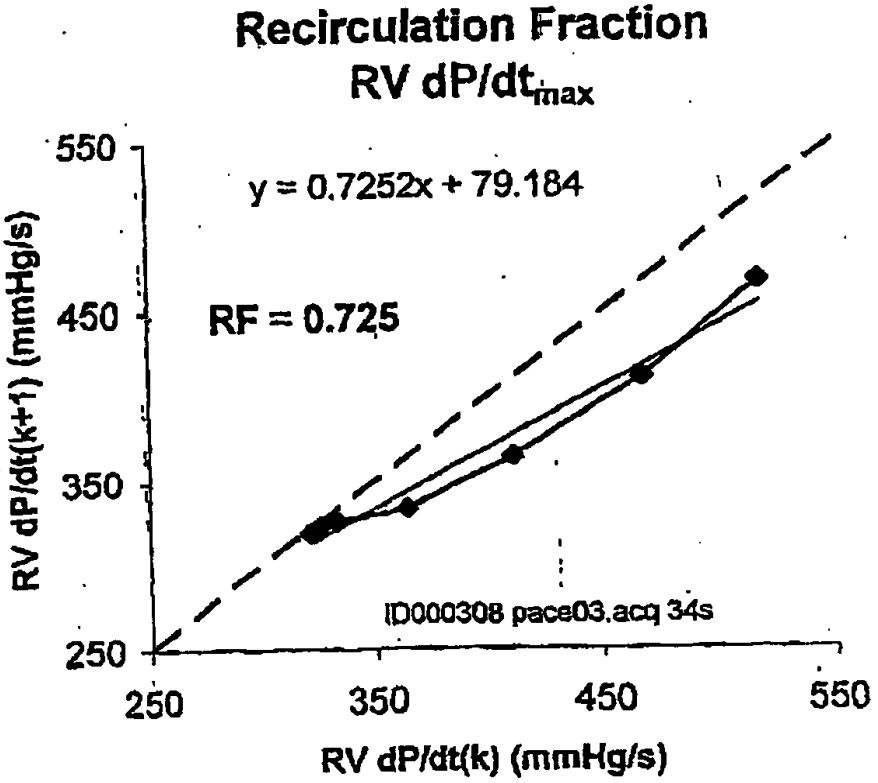
Recirculation Fraction
RV dP/dtmax
y = 0.7252x + 79.184
RF = 0.725
ID000308 pace03.acq 34s
RV dP/dt(k+1) (mmHg/s)
RV dP/dt(k) (mmHg/s)
550
450
350
250
250
350
450
550

FIG. 5

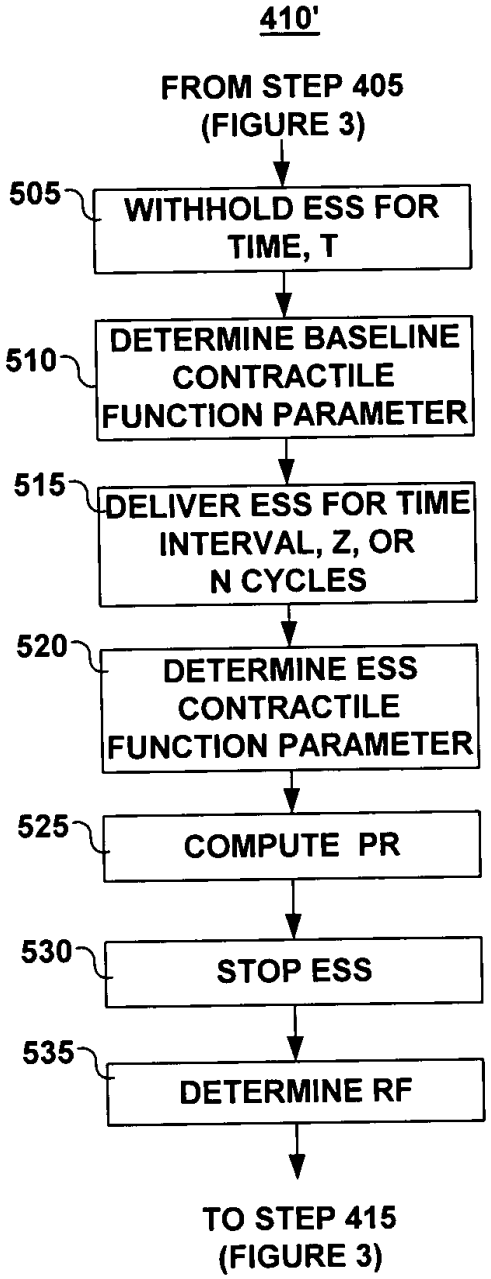
410'
FROM STEP 405
(FIGURE 3)
505
WITHHOLD ESS FOR TIME, T
510
DETERMINE BASELINE CONTRACTILE FUNCTION PARAMETER
515
DELIVER ESS FOR TIME INTERVAL, Z, OR N CYCLES
520
DETERMINE ESS CONTRACTILE FUNCTION PARAMETER
525
COMPUTE PR
530
STOP ESS
535
DETERMINE RF
TO STEP 415
(FIGURE 3)

FIG. 6

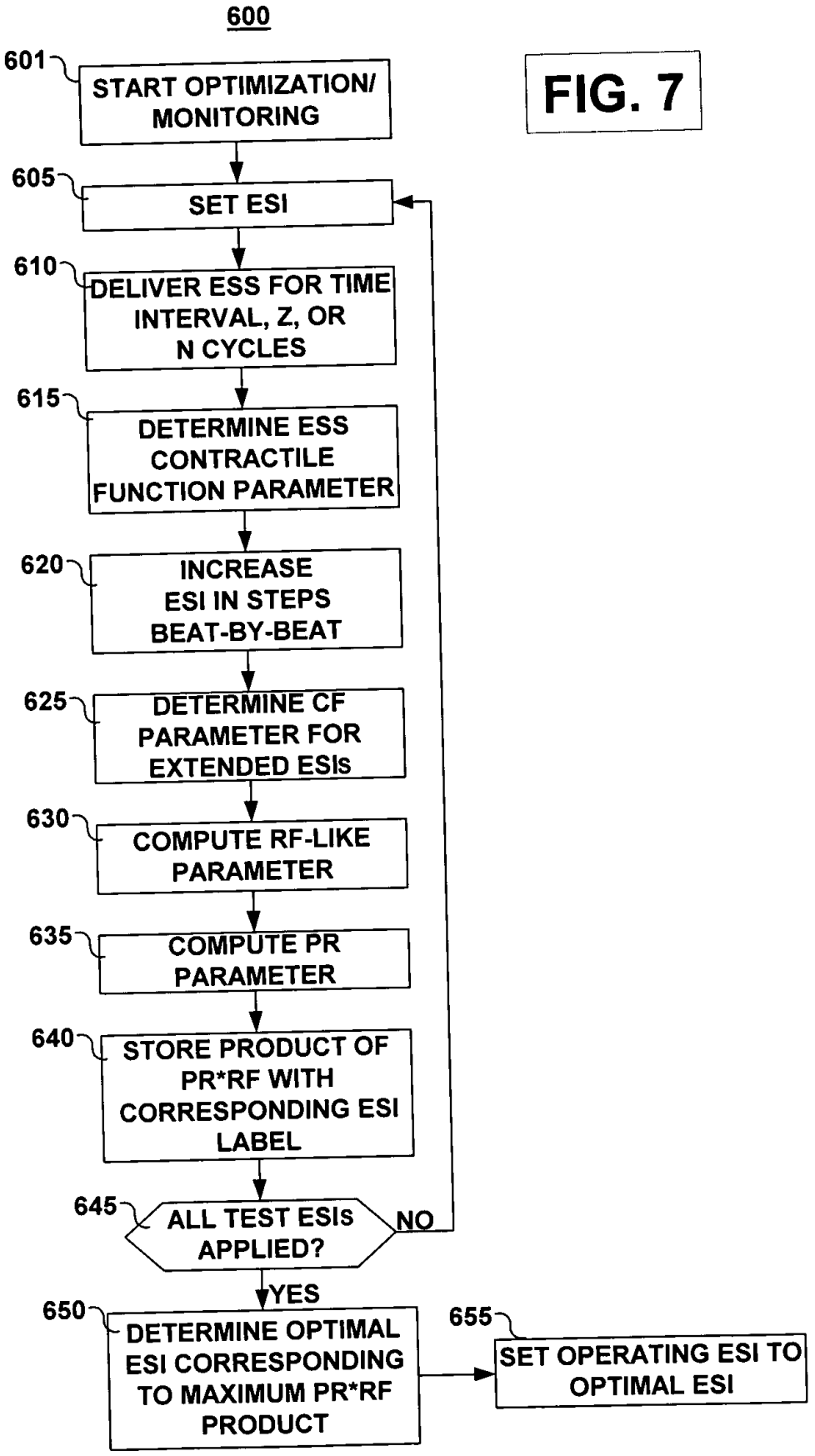
600
601
START OPTIMIZATION/ MONITORING
605
SET ESI
610
DELIVER ESS FOR TIME INTERVAL, Z, OR N CYCLES
615
DETERMINE ESS CONTRACTILE FUNCTION PARAMETER
620
INCREASE ESI IN STEPS BEAT-BY-BEAT
625
DETERMINE CF PARAMETER FOR EXTENDED ESIs
630
COMPUTE RF-LIKE PARAMETER
635
COMPUTE PR PARAMETER
640
STORE PRODUCT OF PR*RF WITH CORRESPONDING ESI LABEL
645
ALL TEST ESIs APPLIED?
NO
YES
650
DETERMINE OPTIMAL ESI CORRESPONDING TO MAXIMUM PR*RF PRODUCT
655
SET OPERATING ESI TO OPTIMAL ESI

FIG. 7